

WHAT IS CLAIMED IS:

1. A dielectric reproducing apparatus for reproducing data recorded in a dielectric material, comprising:

5 a probe for detecting a capacitance of the dielectric material which differs depending on a polarization state of the dielectric material corresponding to the data;

10 an alternating current signal generation device for generating an alternating current signal and applying the alternating current signal to the dielectric material;

an oscillation device for generating an oscillation signal modulated in frequency according to the capacitance of the dielectric material which is detected through the probe in a situation that the alternating current signal is being applied to the dielectric material;

15 a demodulation device for demodulating the oscillation signal; and

a data reproduction device for reproducing the data on the basis of phase information of the demodulated oscillation signal.

20 2. The dielectric reproducing apparatus according to claim 1, wherein the data reproduction device reproduces the data on the basis of a difference in phase between the alternating current signal and the demodulated oscillation signal.

25 3. The dielectric reproducing apparatus according to claim 1, wherein the data reproduction device reproduces the data by

comparing a phase of the demodulated oscillation signal in a first period and a phase of the demodulated oscillation signal in a second period.

5    4.    The dielectric reproducing apparatus according to claim 1, wherein the dielectric material is a ferroelectric material.

5.    A dielectric recording / reproducing apparatus for performing data recording and data reproduction using a dielectric material as a  
10    recording medium, comprising:

      a probe for recording data to be recorded in the dielectric material and for detecting a capacitance of the dielectric material which differs depending on a polarization state of the dielectric material corresponding to the data;

15    a recording signal generation device for generating a recording signal corresponding to the data to be recorded;

      an application device for applying the recording signal to the dielectric material through the probe;

20    an alternating current signal generation device for generating an alternating current signal and applying the alternating current signal to the dielectric material;

      an oscillation device for generating an oscillation signal modulated in frequency according to the capacitance of the dielectric material which is detected through the probe in a situation that the  
25    alternating current signal is being applied to the dielectric material;

      a demodulation device for demodulating the oscillation signal;

and

a data reproduction device for reproducing the data on the basis of phase information of the demodulated oscillation signal.

5 6. The dielectric recording / reproducing apparatus according to claim 5, wherein the data reproduction device reproduces the recorded data on the basis of a difference in phase between the alternating current signal and the demodulated oscillation signal.

10 7. The dielectric recording / reproducing apparatus according to claim 5, wherein the data reproduction device reproduces the recorded data by comparing a phase of the demodulated oscillation signal in a first period and a phase of the demodulated oscillation signal in a second period.

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8. The dielectric recording / reproducing apparatus according to claim 5, further comprising a switching device for switching between a first line for sending the recording signal from the application device to the dielectric material through the probe and a second line 20 for sending the alternating current signal from the alternating current signal generation device to the dielectric material.

25 9. The dielectric recording / reproducing apparatus according to claim 5, wherein the application device comprising a superimposing device for superimposing the alternating current signal onto the recording signal, and the application device applies the recording

signal on which the alternating current signal is superimposed to the dielectric material through the probe.

10. The dielectric recording / reproducing apparatus according to  
5 claim 9, further comprising a switching device for switching between  
a first line for sending the recording signal, on which the alternating  
current signal is superimposed, from the application device to the  
dielectric material though the probe and a second line for sending the  
alternating current signal from the alternating current signal  
10 generation device to the dielectric material.

11. The dielectric recording / reproducing apparatus according to  
claim 5, wherein the dielectric material is a ferroelectric material.